

Grade 5 Mathematics – Unit 2: Patterns and Order of Operations

Phoenixville Area School District

Stage 1 Desired Results		
<p>PA Core Standards: <u>CC.2.2.5.A.1</u> - Interpret and evaluate numerical expressions using order of operations.</p> <p><u>CC.2.2.5.A.4</u> - Analyze patterns and relationships using two rules</p> <p>PSSA Assessment Anchors: <u>M05.B-O.1.1</u> - Analyze and complete calculations by applying the order of operations.</p> <p><u>M05.B-O.2.1</u> - Create, extend, and analyze patterns.</p>	Transfer	
	<p>TRANSFER GOALS <i>Students will be able to independently use their learning to...</i></p> <ul style="list-style-type: none"> • <i>Number Sense:</i> Develop a sound foundation to demonstrate the value of numbers by describing their various representations, relationships, and patterns. • <i>Fluency:</i> Demonstrate automatic recall of addition, subtraction, multiplication and division facts. • <i>Problem-Solving:</i> Persistently apply various problem-solving strategies and organized approaches to accurately understand and solve problems. • <i>Mathematical Vocabulary:</i> Interpret mathematical vocabulary and apply proper terminology to engage in meaningful oral and written expression that communicates mathematical thinking, problem-solving methods, and rationale. 	
	Meaning	
	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; padding: 5px;"> <p>UNDERSTANDINGS <i>Students will understand that...</i></p> <ul style="list-style-type: none"> • Mathematical situations and structures can be represented and analyzed using symbols to advance algebraic thinking. • Patterns exhibit relationships that can be extended, described, and generalized. • Mathematics is a language of carefully defined terms and symbols. </td> <td style="width: 50%; padding: 5px;"> <p>ESSENTIAL QUESTIONS <i>Students will keep considering...</i></p> <ul style="list-style-type: none"> • How do we use symbols to create mathematical meaning? • What is the unknown? How do I find it? • What does this expression/equation mean? What are the ways to represent it? Is there a best way? • Have I represented the relationships between the quantities appropriately? </td> </tr> </table>	<p>UNDERSTANDINGS <i>Students will understand that...</i></p> <ul style="list-style-type: none"> • Mathematical situations and structures can be represented and analyzed using symbols to advance algebraic thinking. • Patterns exhibit relationships that can be extended, described, and generalized. • Mathematics is a language of carefully defined terms and symbols.
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Knowledge and Skills Acquisition		
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	<p>Multiplication/Division (left to right), Addition/Subtraction (left to right).</p> <ul style="list-style-type: none"> • Operations inside grouping symbols including brackets, braces, and parentheses should be solved before other operations. • Patterns have a starting term and a rule that is applied to the starting term, and each term after. • When two patterns and their respective terms are given, there is a relationship between the corresponding terms of the patterns. <p>VOCABULARY</p> <ul style="list-style-type: none"> • Grouping Symbols • Simplify • Evaluate • Order of Operations • Numerical Expression • Terms 	<ul style="list-style-type: none"> • Acknowledging that grouping symbols takes precedence over other operations through multiple-choice and open-ended questions. • Applying the “rewriting” strategy after each step of evaluation of an expression in written and open-ended formats. • Identifying the rule of a pattern based on the change that occurs between terms in multiple choice and open-ended questions. • Determining the relationship between corresponding terms on two patterns with different rules in multiple choice and open-ended questions.
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Stage 2 – Evidence

Code A/M/T	Evaluative Criteria	Assessment Evidence	
N/A	N/A	<p>PERFORMANCE TASK(S) <i>Students will demonstrate understanding (meaning-making and transfer) through complex performance by...</i></p> <p>Number Patterns Performance Task</p> <p>Constructed Response: Order of Operations</p> <ul style="list-style-type: none"> • Includes error analysis in addition to order of operations skills 	<p>Differentiation Considerations: N/A</p>

<p>M</p>	<p>Valid conclusions are made based on given/ implied/ found information.</p> <p>Explains one's reasoning efficiently using mathematics, words, or both.</p>	<p>OTHER EVIDENCE</p> <p>Paper-Based Patterns Assessment - Department-Created</p> <ul style="list-style-type: none"> • Multiple Choice (web-based or printed) <p>Paper-Based Order of Operations Assessment - Department-Created</p> <ul style="list-style-type: none"> • Multiple Choice (web-based or printed) <p>Alternative Patterns Assessment - Created as “Quiz” in Canvas</p> <ul style="list-style-type: none"> • Constructed Response and Multiple Choice from Study Island 	<p>Differentiation Considerations:</p> <p>[Work on this section after completing Stages 1-2 of all units]</p>
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